

Protecting the U.S.
Workforce from Aerosol
Transmissible Infectious
Disease Outbreaks with
High Public Health
Consequences: A Control
Banding Approach

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**"A control banding framework for protecting the
US workforce from aerosol transmissible infectious
disease outbreaks with high public health
consequences."**

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Background

- Previous outbreaks and pandemics highlighted the importance of protecting many different types of jobs – not just healthcare
- Demand for respiratory protection will far exceed supply

GOAL: Classify jobs into “Control Bands” to prioritize PPE for highest risk categories

Categorizing Risk

Risk

- \approx (toxicity)(exposure level)

Toxicity

- Most relevant quantitative health outcome is the infectious dose (number of organisms required to induce infection)
 - Usually not known until well after
- Use Risk Group as surrogate

Risk Group Definitions*

- **Risk Group R1** - Agents not associated with disease in healthy adult humans
- **Risk Group R2** - Agents associated with human disease that is rarely serious and for which preventive or therapeutic interventions are often available
- **Risk Group R3** - Agents associated with serious or lethal human disease for which preventive or therapeutic interventions may be available
- **Risk Group R4** - Agents likely to cause serious or lethal human disease for which preventive or therapeutic interventions are not usually available

Accounts for both the degree of harm and the availability of prophylaxis: <https://my.absa.org/Riskgroups>

$$\text{Exposure} = \text{Likelihood} * \text{Duration}$$

Likelihood	Daily Duration		
	D1 (0-3 hours)	D2 (3-6 hours)	D3 (>6 hours)
L1 (Unlikely Exposure)	E1	E1	E1
L2 (Possible Exposure)	E2	E2	E3
L3 (Likely Exposure)	E2	E3	E3

Control Band

	Risk Rank			
Exposure Rank	R1	R2	R3	R4
E1	A	A	A	B
E2	A	B	B	C
E3	A	B	C	C

Aim to
Lower
Exposure
Level

Risk =
(toxicity)(exposure level)

Can not change risk (inherent
to organism)

Must reduce exposure level to
reduce risk

Control Methods

FIRST - Source Controls

- isolation, social distancing

NEXT - Pathway Controls

- ventilation, barriers

LAST - Receptor Controls

- personal protective equipment

Aim to Lower Exposure Level

GOAL:

Reduce exposure to E1 levels by selecting additional control strategies from the source and pathway categories and reducing reliance on PPE

Band	Control Options
A	Source – Do these first! Pathway – May be prudent Receptor – Not necessary
B	Source – Do these first! May require multiple options Pathway – Do these next & may require multiple options Receptor – Only if source and pathway controls are not effective
C	Source – Do these first! May require multiple options Pathway – Do these next & may require multiple options Receptor - May be prudent